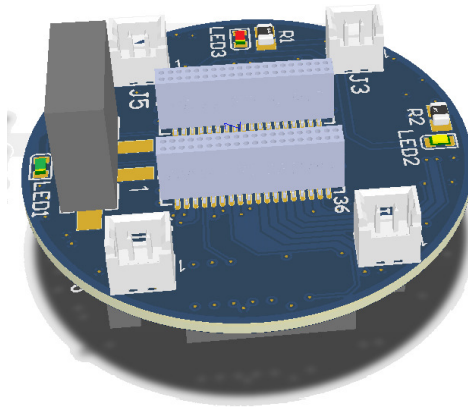


# **Blackrock EIB-54K Omnetics Headstage Adapter**

*PN 7343*



**Blackrock Microsystems, Inc.**

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Salt Lake City, UT 84108

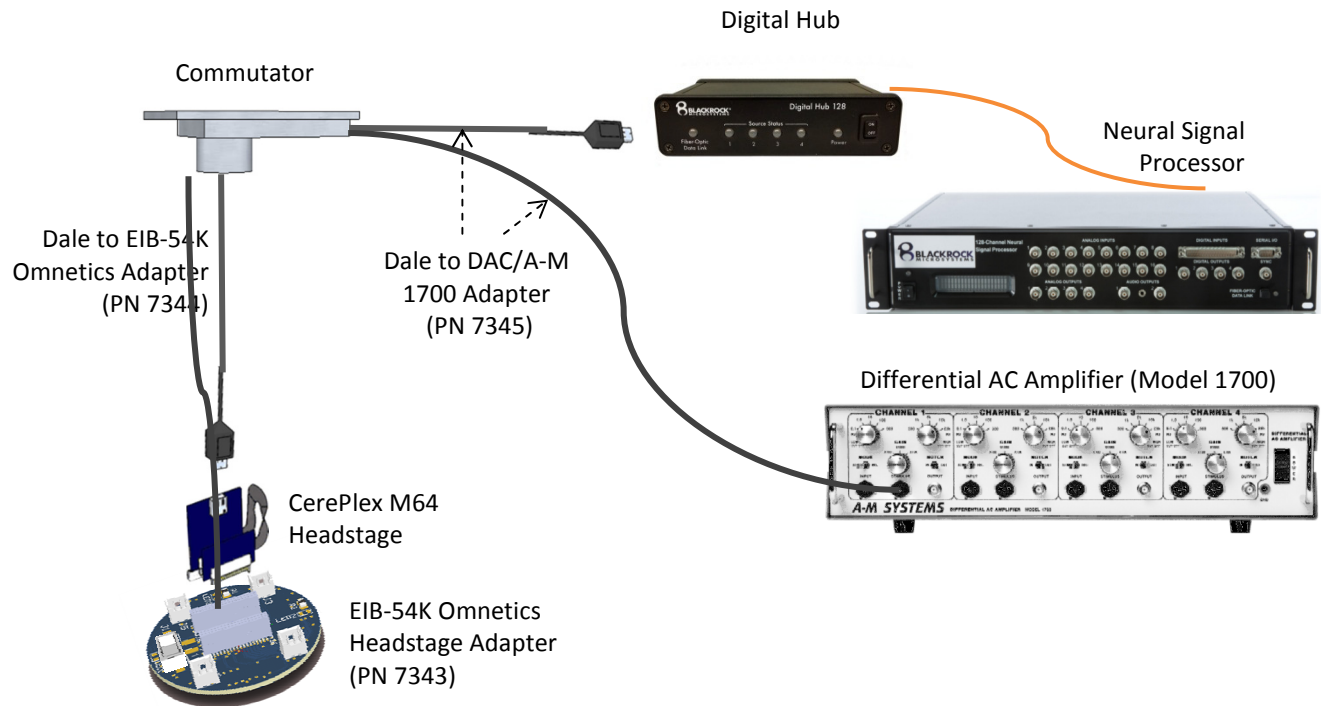
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# EIB-54K Omnetics Headstage Adapter - Instructions for Use

## 1 System Overview

The EIB-54K Omnetics Headstage Adapter integrates a Blackrock 64-Channel Omnetics Headstage with a Neuralynx EIB-54-Kopf electrode interface board, providing 48 electrode channels for recording neural signals, 4 channels for recording from low-impedance EMG electrodes and 2 sets of differential channels for providing stimulation (stim+ and stim- for return path). Figure 1 below shows an application overview of how the EIB-54K Omnetics Headstage Adapter fits into a complete neural recording/stimulation system.



*Figure 1: EIB-54K Omnetics Headstage Adapter*

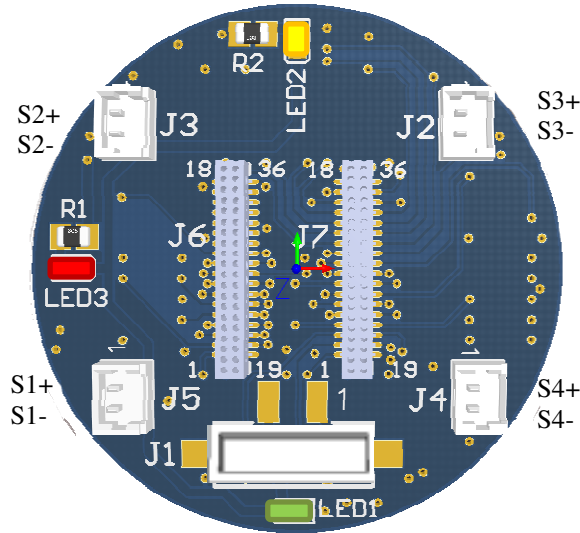
**\*\*NOTE:** The Digital Hub, CerePlex M64, Neural Signal Processor, Commutator, and the A-M Systems Four-Channel Differential AC Amplifier (Model: 1700) are not included in the packaging for this adapter and must be purchased separately.

# EIB-54K Omnetics Headstage Adapter - Instructions for Use

## 2 EIB-54K Omnetics Headstage Adapter (PN 7343)

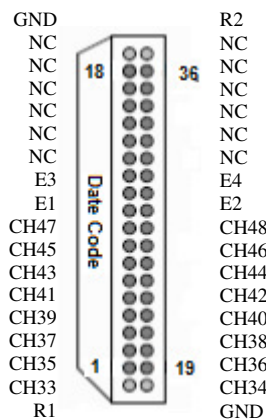
### 2.1

Connections to the Blackrock Neural Signal Processor and the A-M Systems Four-Channel Differential AC Amplifier are provided through connectors on the top of the adapter board. A pin-out of these connectors is provided below. LEDs are provided for tracking with the NeuroMotive System. All pin-outs are viewed looking into the connector.

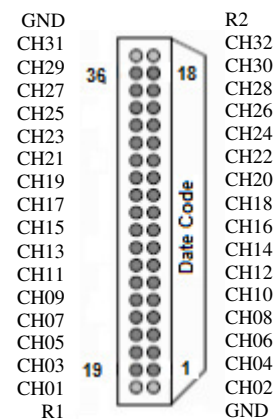


Connector	Connector Description
J1	Power connector for lighting LEDs (+/- V)
J2	S3+,S3-
J3	S2+, S2-
J4	S4+, S4-
J5	S1+, S1-
J6	Connection to CerePlex M64 Bank B (or C)
J7	Connection to CerePlex M64 Bank A
LED1, LED2, LED3	LEDs used for NeuroMotive tracking

Connector J6



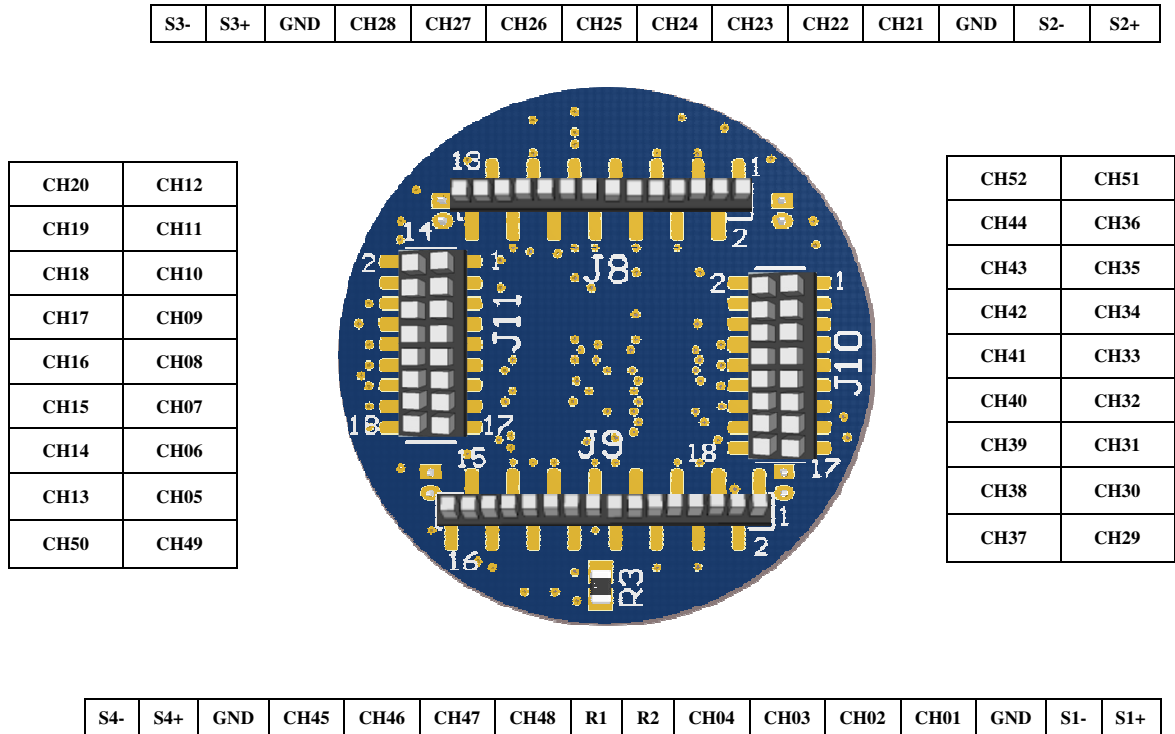
Connector J7



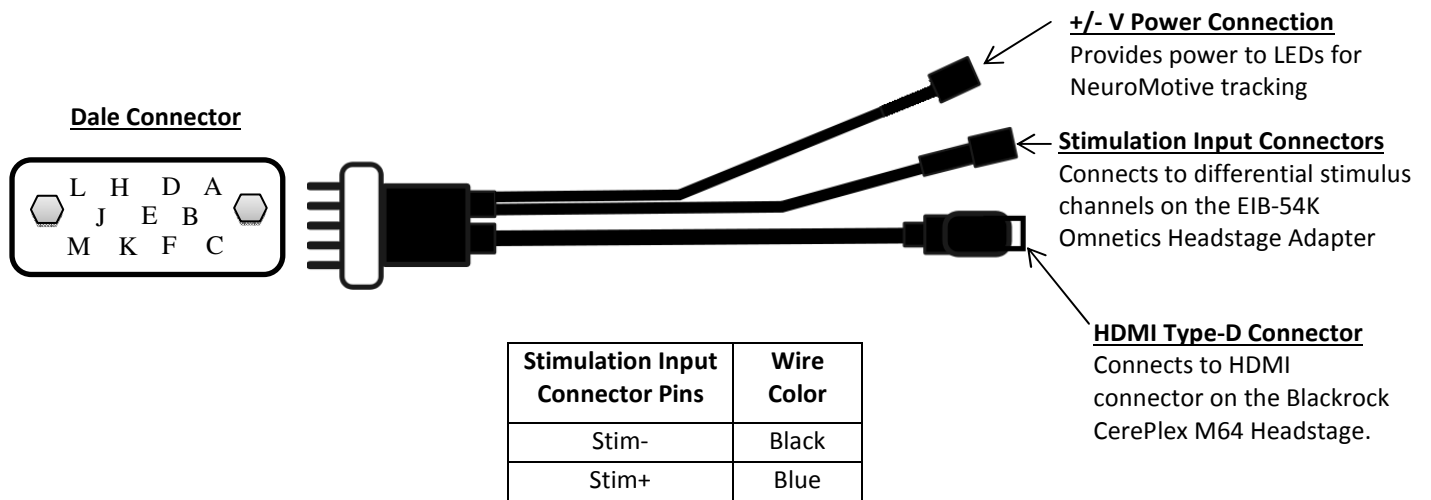
# EIB-54K Omnetics Headstage Adapter - Instructions for Use

## 2.2 Connection to the Neuralynx EIB-54K Board

The bottom of the adapter provides a direct connection to the Neuralynx EIB-54K board. Pin-outs for each connector are provided in the figure below. All pin-outs are viewed looking into the connector. For mapping between the Neuralynx EIB-54K board and the Blackrock EIB-54K Omnetics Headstage Adapter, refer to section 6 below.



## 3 Dale to EIB-54K Omnetics Adapter (PN 7344) Pin-Out

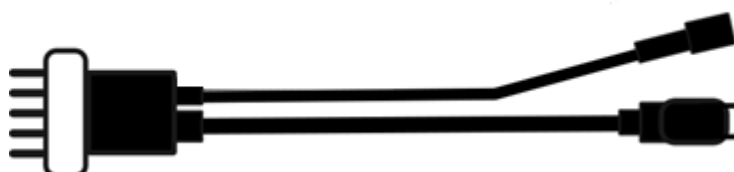
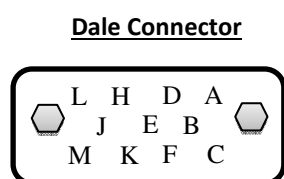


## EIB-54K Omnetics Headstage Adapter - Instructions for Use

Dale Connector Pin	Signal
A	GND
B	+V
C	-V
D	+CLK
E	+DATA
F	-DATA
H	-CLK
J	Stim- (black)
K	Stim+ (blue)
L	Not Connected
M	Not Connected

HDMI/D Pin#	Description
9	+DATA
11	-DATA
12	+CLK
14	-CLK
16	-V
19	+V
1	GND
2, 3, 4, 5, 6, 7, 8, 10, 13, 15, 17, 18	Not Connected

### 4 Dale to DAC/A-M 1700 Adapter (PN 7345) Pin-Out



#### **Stimulation Output Connector**

Connects to the stimulus connector of the A-M Systems Differential AC Amplifier (Model: 1700)

#### **HDMI Type-A Connector**

Connects to the HDMI connector on the Blackrock DAC.

Dale Connector Pin	Signal
A	GND
B	+V
C	-V
D	+CLK
E	+DATA
F	-DATA
H	-CLK
J	Stim- (black)
K	Stim+ (red)
L	Not Connected
M	Not Connected

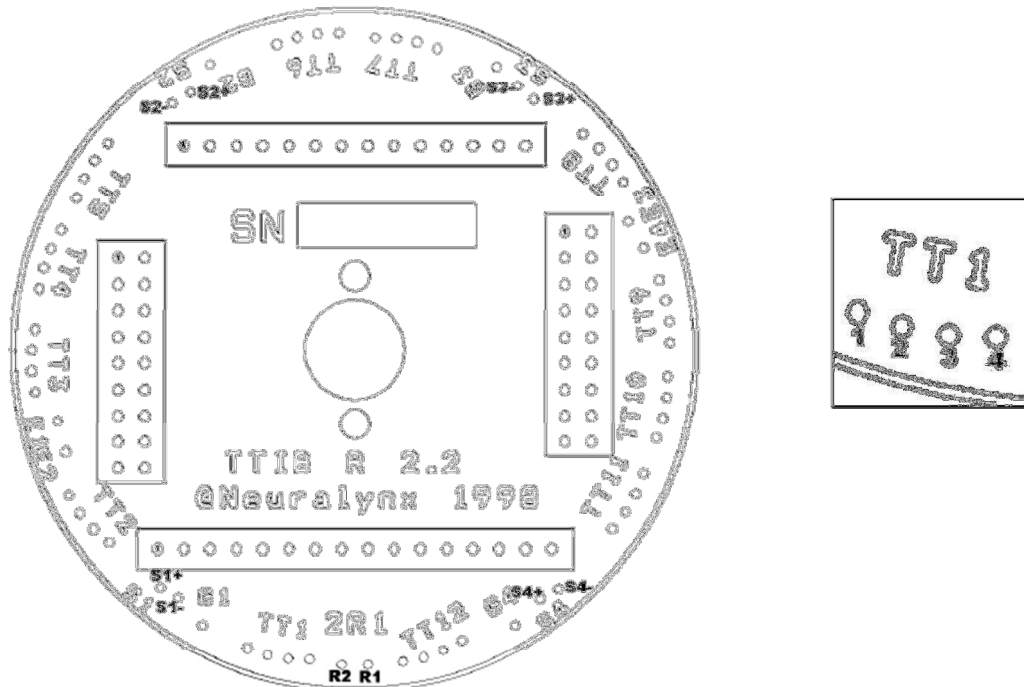
HDMI/A Pin#	Description
7	+DATA
9	-DATA
10	+CLK
12	-CLK
17	-V
18	+V
19	GND
1, 2, 3, 4, 5, 6, 8, 11, 13, 14, 15, 16	Not Connected

## EIB-54K Omnetics Headstage Adapter - Instructions for Use

Stimulation Output Connector Pins	Signal	Wire Color
A	Stim+	Blue
B	Stim-	Black
C	Not Connected	NA
D	Not Connected	NA
E	Not Connected	NA

\*Refer to the A-M Systems Four-Channel Differential AC Amplifier user manual for further instructions regarding the use of this system.

### 5 EIB-54K Interface Board Pin Layout



EIB-54K: Pin Layout (Top View)

NOTE: Each tetraode (TT1, TT2, TT3, etc...) is laid out according to the diagram above when looking at the TT# label right side up

### 6 EIB-54K Omnetics Headstage Adapter Channel Mapping

The following table provides the channel mapping between the Neuralynx EIB-54K electrode interface board and the Blackrock 64-Channel Omnetics Headstage Electrode Channel.

EIB-54K TETRODE	EIB-54K TETRODE/EEG CHANNEL	NEURAL SIGNAL PROCESSOR ELECTRODE CHANNEL
TT1	1	CH01
	2	CH02
	3	CH03

## EIB-54K Omnetics Headstage Adapter - Instructions for Use

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	4	CH04
TT2	1	CH38
	2	CH39
	3	CH40
	4	CH41
TT3	1	CH33
	2	CH32
	3	CH31
	4	CH30
TT4	1	CH51
	2	CH36
	3	CH35
	4	CH34
TT5	1	CH42
	2	CH43
	3	CH44
	4	CH52
TT6	1	CH24
	2	CH23
	3	CH22
	4	CH21
TT7	1	CH28
	2	CH27
	3	CH26
	4	CH25
TT8	1	CH11
	2	CH10
	3	CH09
	4	CH08
TT9	1	CH16
	2	CH17
	3	CH18
	4	CH19
TT10	1	CH50
	2	CH13

## EIB-54K Omnetics Headstage Adapter - Instructions for Use

	3	CH14
	4	CH15
TT11	1	CH07
	2	CH06
	3	CH05
	4	CH49
TT12	1	CH48
	2	CH47
	3	CH46
	4	CH45
E1	1	CH29
E2	1	CH37
E3	1	CH12
E4	1	CH20

## 7 Instructions for Assembly

**WARNING:** Always use antistatic or electrostatic discharge (ESD) safe gloves when connecting the EIB-54K Omnetics Adapter

**CAUTION:** Refer to the individual user manuals for the Neuralynx EIB-54K, CerePlex M Headstage, Blackrock Cerebus System, Digital Hub, and A-M Systems Differential AC Amplifier (Model 1700) for the set-up and appropriate use of these systems.

1. Turn off all power to the Neural Signal Processing System (i.e. Digital Hub, Neural Signal Processor) and A-M Systems Differential AC Amplifier (Model 1700) before making any connections.
2. Connect the commutator to the Digital Hub and the Stimulus connector(s) on the A-M Systems Differential AC Amplifier (Model 1700) using the Dale to DAC/A-M 1700 Adapter Cable (PN 7345).
3. Connect the EIB-54K Omnetics Headstage Adapter (PN 7343) to the Neuralynx EIB-54K interface board. Use caution when making this connection and verify that all pins align correctly.
4. Connect the Headstage to the Omnetics connectors of the EIB-54K Omnetics Headstage Adapter (PN 7343). NOTE: When connected, the labeling on the Omnetics connectors should face the same direction.
5. Connect the stimulation input connectors to the desired differential stimulation channels on the EIB-54K electrode interface board.
6. Connect the power line from the Dale to EIB-54K Adapter Cable to the power connector on the EIB-54K Omnetics Headstage Adapter board. All three LEDs on the surface of the adapter should light up.
7. Connect the EIB-54K Omnetics Headstage Adapter to the electrodes according to the instructions provided by Neuralynx for the use of the EIB-54K electrode interface board.
8. Power on each system to begin stimulating and recording through the adapter.



### 8 Warranty

Blackrock Microsystems, Inc. warrants that its products are free from defects in materials and manufacturing for a period of one year from the date of shipment. Blackrock will, at its option, repair or replace any product that does not comply with this warranty. This warranty is voided by:

1. Any modification or attempted modification to the product done by anyone other than an authorized Blackrock employee
2. Any abuse, negligent handling or misapplication of the product.

This constitutes the sole warranty made by Blackrock, LLC. There are no other warranties, expressed or implied, which extend beyond those described herein or to anyone other than the original purchaser, including the implied warranties of merchantability and fitness for a particular purpose. In no event shall Blackrock Microsystems, LLC. be liable for any incidental or consequential damages, or for the infringement of any patent rights or third party rights due to the use of its products.

#### 8.1 Return Merchandise Authorization (RMA)

In the unlikely event that your adaptor needs to be returned to Blackrock for repair or maintenance, do not send any equipment back without a Return Merchandise Authorization Number. An RMA number will be issued to you by a Blackrock representative. If you need to obtain an RMA number, you may contact a product support representative at (801) 582-5533 or toll free at (866) 806-3692.

Once an RMA number has been issued, it is important to safely pack the returned item for shipping back to Blackrock. It is preferred that you save the original boxes and packing materials that your system arrived in for return shipment. Please address the package as follows:

**Blackrock Microsystems, LLC**  
**ATTN: RMA#**  
**630 Komas Drive, Suite 200**  
**Salt Lake City, UT 84108 USA**  
**Tel: (801) 582-5533**